

WHAT IS CLAIMED IS:

1. A semiconductor device comprising:
a semiconductor substrate;
an insulating layer formed on the semiconductor
5 substrate;
an inductor formed on the insulating layer;
a guard ring formed in the semiconductor
substrate, surrounding the inductor and being a closed
ring composed of waving segments connected, end to end;
10 and
a potential-applying line which applies a
predetermined potential to the guard ring.
2. The semiconductor device according to claim 1,
wherein the potential-applying line comprises a first
15 contact plug which connects one part of the guard ring
to a power-supply line.
3. The semiconductor device according to claim 1,
wherein the potential-applying line comprises a first
line which is provided above the guard ring and which
20 is composed of waving segments connected, end to end,
and a plurality of second contact plugs which connect
the first line to the guard ring.
4. The semiconductor device according to claim 3,
wherein the potential-applying line is an open ring
25 made by cutting and removing a part of a closed ring.
5. The semiconductor device according to claim 3,
wherein the guard ring is an open ring made by cutting

and removing a part of a first closed ring, and the potential-applying line is an open ring made by cutting and removing that part of a second closed ring which is aligned with said part of the first closed ring.

5 6. The semiconductor device according to claim 1, wherein the guard ring comprises first segments and second segments which are alternately arranged and connected to one another, the second segments extending at right angles to the first segments.

10 7. A semiconductor device comprising:
a semiconductor substrate;
an insulating layer formed on the semiconductor substrate;
an inductor formed on the insulating layer;
15 a guard ring formed in the semiconductor substrate, surrounding the inductor and being composed of a plurality of segments spaced apart from one another; and

20 a potential-applying line which applies a predetermined potential to the guard ring and which comprises a plurality of segments located above spaces between the segments of the guard ring, respectively.

25 8. The semiconductor device according to claim 7, further comprising a plurality of contact plugs which connect the guard ring and the potential-applying line in series.

9. The semiconductor device according to claim 7,

further comprising a second contact plug which connects a part of the potential-applying line to a power-supply terminal which applies the predetermined potential.

10. The semiconductor device according to claim 1,
5 wherein the inductor is shaped like a spiral.

11. The semiconductor device according to claim 7, wherein the inductor is shaped like a spiral.

12. The semiconductor device according to claim 1,
10 wherein the semiconductor substrate is of a first conductivity type, and the guard ring has been formed by adding impurities of the first conductivity type to the semiconductor substrate.

13. The semiconductor device according to claim 7,
15 wherein the semiconductor substrate is of a first conductivity type, and the guard ring has been formed by adding impurities of the first conductivity type to the semiconductor substrate.